

**USDA Service Center Initiative
Geospatial Data Acquisition, Integration and Delivery
Business Re-engineering Project**

Data Themes - Outline - Climate (PRISM - Temperature and Precipitation)

I. Acquisition

A. Data Source

1. Producer Information

a. Name

The climate information in this theme is a product of the Parameter-elevation Regressions on Independent Slopes Model.

PRISM layers are produced by Oregon Climate Service located at Oregon State University, and provided to the National Cartographic and Geospatial Center for final preparation and distribution to the NRCS.

b. Location of Headquarters

Natural Resources Conservation Service
P.O. Box 2890
Washington, DC 20013

National Cartography and Geospatial Center
USDA - Natural Resources Conservation Service
P.O. Box 6567
Fort Worth, TX 76115

National Water and Climate Center
Natural Resources Conservation Service
USDA
101 SW Main Street, Suite 1600
Portland, Oregon 97204-3224

Oregon Climate Service
College of Oceanic & Atmospheric Sciences
Oregon State University
Strand Ag Hall - Room 316
104 Ocean Admin Bldg
Corvallis, OR 97331-5503

c. Internet Addresses

<http://www.ftw.nrcs.usda.gov>

<http://www.ocs.orst.edu>

2. Publisher Information

a. Name

PRISM data are published by USDA-NRCS-NCGC. It is available through the National Geospatial Data Clearinghouse. Technical information is available from the National Water and Climate Center or Oregon Climate Service at Oregon State University.

b. Location of Headquarters

National Cartography and Geospatial Center
USDA - Natural Resources Conservation Service
P.O. Box 6567
Fort Worth, TX 76115
(800) 672-5559 Telephone (Ordering Information)
(402) 437-5423 Telephone (Tech Support)
(817) 509-5469 FAX

National Water and Climate Center
Natural Resources Conservation Service
USDA
101 SW Main Street, Suite 1600
Portland, Oregon 97204-3224

Oregon Climate Service
College of Oceanic & Atmospheric Sciences
Oregon State University
Strand Ag Hall - Room 316
104 Ocean Admin Bldg
Corvallis, OR 97331-5503

c. Internet Address

<http://www.ftw.nrcs.usda.gov/prism/prism.html>

http://www.ocs.orst.edu/prism/prism_new.html

3. Acquisition Information

a. Delivery Media

The map extent for a PRISM Geographic data set is by state, region or national. A PRISM data set consists of map data, attribute data, and metadata. PRISM data are available for continental United States and will eventually be available for Hawaii, Alaska and US possessions.

Digital PRISM data sets are available via anonymous file transfer protocol (ftp) or CD-ROM (ISO9660).

Currently, attribute information is extracted for PRISM map data and is being delivered to the business process reengineering (BPR). PRISM Climate data is being provided to the pilot sites in its standard format.

b. Download URL

<http://www.ftw.nrcs.usda.gov/prism/prism.html>

http://www.ocs.orst.edu/prism/prism_new.html

- c. Projected Data Availability Schedule

http://www.ocs.orst.edu/prism/prism_products.html (archived PRISM)

B. Standards Information

1. Geospatial Data Standard

- a. Standard Name and Steward Information

Draft National Standard for Soil Geographic Data

Federal Geographic Data Committee Standards are established for each PRISM Layer and documented for each Parameter separately.

- b. Standard Version

December 1998

- c. Standard URL

http://www.ocs.orst.edu/prism/state_products/us_maps.html

(Each Parameter is documented separately.)

2. Metadata Standard

- a. Standard Name and Steward Information

Metadata are compliant to the Federal Geographic Data Committee, 1994, Content Standards for Digital Geospatial Metadata.

- b. Description of Metadata Captured

A metadata text file is distributed with each PRISM data set. The metadata text file provides information on the content, quality, condition, and other characteristics of the data. The sections of metadata include the following:

Identification_Information
Data_Quality_Information
Spatial_Data_Organization_Information
Spatial_Reference_Information
Entity_and_Attribute_Information
Distribution_Information
Metadata_Reference_Information

- c. Metadata Accuracy and Completeness Assessment

The metadata is typically complete. Additional information and a metadata template are available in the geospatial data standard.

C. Acquired Data Structure

1. Geospatial Data Format

a. Format (raster, vector, etc.)

For many themes both gridded ASCII (raster) and vector (polygon) coverages are available. For others, only gridded data are available. A PRISM data set consists of map data, attribute data, and site metadata. PRISM data are archived as state, region, or national coverages.

b. Format Name

PRISM Gridded data are available in Arc INFO and GRASS formats. Arc polygon coverages, stored in Arc export format (.e00) are available at the OSU PRISM web site.

c. Data Extent

For most PRISM themes data are available for each of the 48 conterminous States, and are under development for the outlying States and territories.

d. Horizontal and Vertical Resolution

PRISM is being used to model climate elements and derived variables at a 2.5 minute horizontal resolution using the latitude-longitude (GEO) coordinate system, resulting in an effective resolution of approximately 4 kilometers in mid-latitudes. 4 kilometer products are then filtered to an effective resolution twice as fine (approximately 2 kilometers).

e. Nominal Scale

Maps are made using the 1:250,000 scale DEM, and are displayed at scales ranging from 1:250,000 to 1:2 million. Typically scales are 1:1 million.

f. Horizontal and Vertical Datum

Horizontal datum name: North American datum 1983 (NAD83)
Ellipsoid Name: GRS1980
Semi major Axis: 6378137.0

g. Projection

PRISM uses the Geographic projection (Latitude-Longitude) at the 2.5 minute horizontal resolution.

h. Coordinate Units

Data coordinates are in geographic decimal degrees. Both are referenced to the North American Datum of 1983 (NAD83).

i. Average Data Set Size

ARC interchanges files average 31 kilobytes to 910 kilobytes.

The metadata averages 21 kilobytes

2. Attribute Data Format

a. Format Name

Attribute data are distributed in ASCII format.

b. Database Size

500 kilobytes of attributes (compressed) per data set

2. Data Model

- a. Geospatial Data Structure
- b. Attribute Data Structure
- c. Database Table Definition
- d. Data Relationship Definition

a) Identification_Information

Identification_Information:

Citation:

Citation_Information:

Originator:

Chris Daly of Oregon State University and George Taylor of the Oregon

Climate Service at Oregon State University

Publication_Date: 199804

Title: United States Average Monthly or Annual Precipitation, 1961-90

Publication_Information:

Publication_Place: Portland, Oregon, USA

Publisher:

Water and Climate Center of the Natural Resources Conservation Service

Description:

Abstract:

This ftp site contains spatially gridded precipitation of average monthly and annual precipitation for the climatological period 1961-90. Distribution of the point measurements to a spatial grid was accomplished using the PRISM model, developed by Chris Daly of PRISM Services/Oregon State University. Care should be taken in estimating precipitation values at any single point on the map. Precipitation estimated for each grid cell is an average over the entire area of that cell; thus, point precipitation can be estimated at a spatial precision no better than half the resolution of a cell. For example, the Oregon precipitation data was distributed at a resolution of approximately 4km. Therefore, point precipitation can be estimated at a spatial precision no better than 2km. However, the overall distribution of precipitation features is thought to be

accurate. For further information, the online PRISM homepage can be found at <URL:http://www.ocs.orst.edu/prism/prism_new.html>.

Purpose:

Display and/or analyses requiring spatially distributed monthly or annual precipitation for the climatological period 1961-90.

Supplemental_Information:

There are many methods of interpolating precipitation from monitoring stations to grid points. Some provide estimates of acceptable accuracy in flat terrain, but few have been able to adequately explain the extreme, complex variations in precipitation that occur in mountainous regions. Significant progress in this area has been achieved through the development of PRISM (Parameter-elevation Regressions on Independent Slopes Model). PRISM is an analytical model that uses point data and a digital elevation model (DEM) to generate gridded estimates of monthly and annual precipitation (as well as other climatic parameters). PRISM is well suited to regions with mountainous terrain, because it incorporates a conceptual framework that addresses the spatial scale and pattern of orographic precipitation.

Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 19610101

Ending_Date: 19901231

Currentness_Reference:

Climatological period from which the point observations were taken.

Status:

Progress: Complete

Maintenance_and_Update_Frequency:

None planned for the 1961-90 climatological period. However, this data set will most likely be updated in 2001 for the new 1971-2000 climatological period.

Spatial_Domain:

Bounding_Coordinates:

West_Bounding_Coordinate: -126.020833333333

East_Bounding_Coordinate: -64.979166666667

North_Bounding_Coordinate: 50.020833333333

South_Bounding_Coordinate: 24.062500000000

Keywords:

Theme:

Theme_Keyword_Thesaurus: None

Theme_Keyword: raster data

Theme_Keyword: precipitation

Theme_Keyword: grid cell

Place:

Place_Keyword_Thesaurus: None

Place_Keyword: United States, USA

Access_Constraints:

n/a, no restrictions apply

Use_Constraints:

Acknowledgement of the following agencies in products derived from these data: Natural Resources Conservation Service (NRCS) Water and Climate Center, NRCS National Cartography and Geospatial Center (NCGC), PRISM Model, and the Oregon Climate Service at Oregon State University.

Point_of_Contact:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Oregon Climate Service at Oregon State

University

Contact_Address:

Address_Type: mailing address

Address:

Strand Ag Hall 326, Oregon Climate Service, Oregon State

University

City: Corvallis

State_or_Province: OR

Postal_Code: 97331-2209

Country: USA

Contact_Voice_Telephone: (541) 737-5705

Contact_Facsimile_Telephone: (541) 737-5710

Contact_Electronic_Mail_Address: oregon@oce.orst.edu

Security_Information:

Security_Classification_System: None

Security_Classification: Unclassified

Security_Handling_Description: None

Native_Data_Set_Environment: SunOS, 5.5.1, sun4m UNIX

b) Data_Quality_Information

Data_Quality_Information:

Logical_Consistency_Report:

All data were based on the same averaging period (1961-1990). Similar quality assurance procedures were used with all input data sets.

Completeness_Report:

Point estimates of precipitation originated from the following sources: National Weather Service Cooperative (COOP) stations, 2) Natural Resources Conservation Service (NRCS) SNOTEL, 3) local networks. All COOP station data were subjected to quality control checks by the National Climatic Data Center (NCDC).

Positional_Accuracy:

Horizontal_Positional_Accuracy:

Horizontal_Positional_Accuracy_Report:

Accuracy of this data set is based on the original specification of the Defense Mapping Agency (DMA) 1 degree digital elevation models (DEM). The stated accuracy of the original DEMs are 130 m circular error with 90% probability.

Quantitative_Horizontal_Positional_Accuracy_Assessment:

Horizontal_Positional_Accuracy_Value: 130 m with 90% probability.

Horizontal_Positional_Accuracy_Explanation:

The broad DMA production objective for 1-degree DEM's.

Lineage:

Source_Information:

Source_Citation:

Citation_Information:

Originator: National Climatic Data Center (NCDC)

Publication_Date: 1991

Title:

U.S. National 1961-1990 Climate Normals, Climatography of
the United States No. 81

Publication_Information:

Publication_Place: Asheville, NC, USA

Publisher: National Climatic Data Center (NCDC)

Type_of_Source_Media: digital files

Source_Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 19610101

Ending_Date: 19901231

Source_Currentness_Reference: ground condition

Source_Citation_Abbreviation: CLIM81

Source_Contribution:

Location and values of known average monthly and annual
precipitation

Source_Information:

Source_Citation:

Citation_Information:

Originator: Natural Resources Conservation Service

Publication_Date: 1991

Title:

Cooperative Snow Survey Data of Federal - State - Private
Cooperative Snow Surveys

Series_Information:

Series_Name:

Cooperative Snow Survey Data of Federal - State -
Private Cooperative Snow Surveys

Issue_Identification: Annual issue for Western US states

Publication_Information:

Publication_Place: Portland, OR, USA

Publisher:

Natural Resources Conservation Service, Water and

Climate Center

Type_of_Source_Media: digital files, paper reports, online

Source_Time_Period_of_Content:

Time_Period_Information:

Range_of_Dates/Times:

Beginning_Date: 19610101

Ending_Date: 19901231

Source_Currentness_Reference: ground condition

Source_Citation_Abbreviation: SNOTEL (SNOWpack TELEmetry)

Source_Contribution:

Location and values of known average monthly and annual
precipitation

Source_Information:
Source_Citation:
Citation_Information:
Originator:
Natural Resources Conservation Service, Water and Climate

Center

Publication_Date: Unpublished material
Title: Local Precipitation monitoring networks
Type_of_Source_Media: digital files
Source_Time_Period_of_Content:
Time_Period_Information:
Range_of_Dates/Times:
Beginning_Date: 19610101
Ending_Date: 19901231
Source_Currentness_Reference: ground condition
Source_Citation_Abbreviation: LOCAL
Source_Contribution:
Location and values of known average monthly and annual
precipitation

Source_Information:
Source_Citation:
Citation_Information:
Originator: Defense Mapping Agency
Publication_Date: 1985
Title:
1:250,000-scale Digital Elevation Models (DEM) also known
as 1-Degree DEM's

Online_Linkage:
URL:<http://edcwww.cr.usgs.gov/doc/edchome/ndcddb/ndcddb.html>>
Publication_Information:
Publication_Place: Washington, DC
Publisher: U.S. Geological Survey
Type_of_Source_Media: digital files
Source_Time_Period_of_Content:
Time_Period_Information:
Single_Date/Time:
Calendar_Date: 1985
Source_Currentness_Reference: Publication Date
Source_Citation_Abbreviation: DEM
Source_Contribution: Terrain surface input to PRISM model for
estimation of precipitation between known points.

Process_Step:

Process_Description:
It is beyond the scope of this metadata to document the
processes involved in generating spatially gridded precipitation
using the PRISM model. However, the processes are
documented in numerous conference proceedings and journal
articles. The references can be found online at
<URL:http://www.ocs.orst.edu/prism/prism_new.html>.
Process_Date: 199804

c) Spatial_Data_Organization_Information

Spatial_Data_Organization_Information:
Direct_Spatial_Reference_Method: Raster
Raster_Object_Information:
Raster_Object_Type: Grid Cell
Row_Count: 623
Column_Count: 1465

d) Spatial_Reference_Information

Spatial_Reference_Information:
Horizontal_Coordinate_System_Definition:
Geographic:
Latitude_Resolution: .04166666666
Longitude_Resolution: .04166666666
Geographic_Coordinate_Units: Decimal degrees
Geodetic_Model:
Horizontal_Datum_Name: World Geodetic Spheroid 1972 (WGS 1972)
Ellipsoid_Name: WGS72
Semi-major_Axis: 6378135.0
Denominator_of_Flattening_Ratio: 298.26

e) Entity_and_Attribute_Information

Entity_and_Attribute_Information:
Detailed_Description:
Entity_Type:
Entity_Type_Label: average precipitation grid cell value
Entity_Type_Definition: ASCII values
Entity_Type_Definition_Source: Self-evident
Attribute:
Attribute_Label: average precipitation grid cell value
Attribute_Definition: spatially gridded average precipitation
Attribute_Definition_Source:
Daly, C., R.P. Neilson, and D.L. Phillips, 1994: A Statistical-
Topographic Model for Mapping Climatological Precipitation
over Mountainous Terrain. J. Appl. Meteor., 33,140-158.
Attribute_Domain_Values:
Range_Domain:
Range_Domain_Minimum: 0
Range_Domain_Maximum: 1500000
Enumerated_Domain:
Enumerated_Domain_Value: <=-1
Enumerated_Domain_Value_Definition: no data available or
outside of range domain
Enumerated_Domain_Value_Definition_Source: Oregon
Climate Service PRISM Project
Attribute_Units_of_Measure: mm * 100
Attribute_Measurement_Resolution: 1

f) Distribution_Information

Distribution_Information:
Distributor:

Contact_Information:

Contact_Person_Primary:

Contact_Person: Oregon Climate Service

Contact_Address:

Address_Type: mailing address

Address: 316 Strand Agricultural Hall

City: Corvallis

State_or_Province: OR

Postal_Code: 97331

Country: USA

Contact_Voice_Telephone: (541) 737-5705

Contact_Facsimile_Telephone: (541) 737-5710

Contact_Electronic_Mail_Address: oregon@oce.orst.edu

Distribution_Liability:

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Standard_Order_Process:

Digital_Form:

Digital_Transfer_Information:

Format_Name: ARC/INFO ASCII Grid

Digital_Transfer_Option:

Online_Option:

Computer_Contact_Information:

Network_Address:

<URL:http://www.ocs.orst.edu/prism/prism_new.html> or

Fees: none

Technical_Prerequisites:

Geographic data are intended for use in a Geographic Information System (GIS). In addition, this publication contains menu and display programs that operate 16 Mb RAM (absolute minimum), CD-ROM drive with ISO 9660 software driver, Graphics card (640x480 pixels with 256 colors, prefer 1024x1024 with 65,535 colors), Color monitor, mouse, and keyboard.

g) Metadata_Reference_Information Data Dictionary

Metadata_Reference_Information:

Metadata_Date: 19980423

Metadata_Contact:

Contact_Information:

Contact_Person_Primary:
 Contact_Person: Tye Parzybok
 Contact_Address:
 Address_Type: mailing address
 Address:
 Strand Ag Hall 326, Oregon Climate Service, Oregon State
 University
 City: Corvallis
 State_or_Province: OR
 Postal_Code: 97331-2209
 Country: USA
 Contact_Voice_Telephone: (541) 737-5705
 Contact_Facsimile_Telephone: (541) 737-5710
 Contact_Electronic_Mail_Address: parzy@oce.orst.edu
 Metadata_Standard_Name: FGDC Content Standards for Digital Geospatial
 Metadata
 Metadata_Standard_Version: 19940608
 Metadata_Security_Information:
 Metadata_Security_Classification_System: None
 Metadata_Security_Classification: Unclassified
 Metadata_Security_Handling_Description: None

D. Policies

1. Restrictions

a. Use Constraints

The U.S. Department of Agriculture, Natural Resources Conservation Service, should be acknowledged as the data source in products derived from these data.

This data set is not designed for use as a primary regulatory tool in permitting or citing decisions, but may be used as a reference source. This is public information and may be interpreted by organizations, agencies, units of government, or others based on needs; however, they are responsible for the appropriate application. Federal, State, or local regulatory bodies are not to reassign to the Natural Resources Conservation Service any authority for the decisions that they make. The Natural Resources Conservation Service will not perform any evaluations of these products for purposes related solely to State or local regulatory programs.

Photographic or digital enlargement of these products to scales greater than at which they were originally mapped can cause misinterpretation of the data. If enlarged, maps do not show the small areas of contrasting zones that could have been shown at a larger scale. The depicted zone boundaries, interpretations, and analysis derived from them do not eliminate the need for onsite review for intensive uses. Thus, these data and their interpretations are intended for planning purposes only. Digital data files are periodically updated. Files are dated, and users are responsible for obtaining the latest version of the data.

b. Access Constraints

None

c. Certification Issues

For the attribute data derived from PRISM to be used for program activities the state Climate Data Liaison must certify it. Also, PRISM data has been certified that it meets required specifications.

2. Maintenance

a. Temporal Information

Digital data files are periodically updated. Files are dated, and users are responsible for obtaining the latest version of the data.

b. Average Update Cycle

Periodic on at least a 10 year update cycle.

E. Acquisition Cost

1. Cooperative Agreement

a. Description of Agreement

None

b. Status of Agreement

None

2. Cost to Acquire Data

FTP is free. \$US 50 for CD-ROM of PRISM map and attribute data.

II. Integration

A. Value Added Process

1. Benefit to the Service Center

Climate data has been identified as a critical layer for several BPR's.

2. Process Model

a. Flow Diagram

b. Process Description

- The PRISM data is downloaded from the NCGC ftp site for the appropriate service center.
- The attribute fields required are extracted from the PRISM data.
- The saved Arc/Info vector map is converted to a shape and .dbf file(s).

3. Technical Issues

a. Tiling

b. Compression

None

c. Scale

The climate data is primarily from 1:250,000 to 1:1 million. As a result, the data should not be used at a scale larger than this.

d. Tonal Matching

This is not applicable to vector data. Raster data is toned for contrast consequently patterns are not consistent from state to state.

e. Edge-matching

A PRISM data set is a for the entire US. Edge-matching is not required because all States were derived as a unit and the edges are congruent.

4. Quality Control

a. Procedures

Each PRISM map is reviewed by the National Climate Data Center (NCDC) and uses certified normals from NCDC. The Regional Climate Centers, the State Climatologist and the NRCS State Climate Data Liaison responsible for the state also review it in question at a minimum. Products are not released until all questions are resolved. Spatial QC is also completed on each product.

b. Acceptance Criteria

Given that each reviewer receives notification about each product and each product is reviewed by the above parties by the review deadline, acceptance is defined by discussion and incorporation of appropriate adjustments contained in the returned reviews that were available by the deadline included in the notification.

5. Data Steward

a. Name and Organization

The data steward for the integrated data is :
Water & Climate Services
National Water and Climate Center
Natural Resources Conservation Service
US Department of Agriculture
101 SW Main Street, Suite 1600
Portland, Oregon 97204-3224 USA

b. Responsibilities

Provide for storage of and accessibility to the PRISM layers and data.

B. Integrated Data Structure

1. Geospatial Data Format

a. Format (raster, vector, etc.)

Vector

b. Format Name

ESRI Shape file

c. Data Extent

State or possession.

d. Horizontal and Vertical Resolution

Same as source data.

e. Absolute Horizontal and Vertical Accuracy

Same as source data.

f. Nominal Scale

Same as source data.

g. Horizontal and Vertical Datum

The horizontal datum is the North American Datum (NAD) 83. The vertical datum is mean sea level.

h. Projection

Geographical (Latitude and Longitude).

i. Coordinate Units

Meters

j. Symbology

2. Attribute Data Format

a. Format Name

b. Database Size

3. Data Model

- a. Geospatial Data Structure
- b. Attribute Data Structure
- c. Database Table Definition
- d. Data Relationship Definition
- e. Data Dictionary

C. Resource Requirements

- 1. Hardware and Software
- 2. Staffing

This is unknown at this time.

D. Integration Cost

- 1. Hardware and Software
- 2. Staffing

This is unknown at this time.

III. Delivery

A. Specifications

- 1. Directory Structure
 - a. Folder Theme Data is Stored In
- 2. File Naming Convention
 - a. List of Theme Files and The File Naming Convention

B. User Information

- 1. Accuracy Assessment
 - a. Alignment with Other Theme Geospatial Data

The data is captured at scales varying from 1:250,000 to 1:1 million. There should be some alignment with the ortho-photo layer but this will not be perfect due to the fact that the data is captured at different scales.

- b. Content

2. Appropriate Uses of the Geospatial Data

- a. Display Scale

The original data source scale or smaller, usually 1:250,000.

- b. Plot Scale

The original data source scale or smaller, usually 1:250,000.

- c. Area Calculations

As accurate as the source data and capture scale and the algorithm used by ArcInfo/ArcView.

- d. Decision Making

Unknown what information is requested here.

C. Maintenance and Updating

1. Recommendations and Guidelines

- a. Frequency of Updates

Update the Service Center PRISM layers are updated in that State.

- b. Location for the Theme Data to be Maintained

Ideally, the data would be extracted from NCGS, processed, then stored at the Service Center using the data.

- c. Maintenance and Updating Procedures Overview